9900107

THUE UNIVERSED SHAVES OF ANY ISERIOA

TO ALL TO WHOM THESE; PRESENTS; SHALL COME;

Michigan Agricultural Experiment Station

MICCOLS, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT, VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN ODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY TECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (I) SHALL BE SOLD BY VARIETY NAME ONLY AS A PECENTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE SEED.)

WHEAT, COMMON

'Bavaria'

In Testimon Marcest, I have hereunto set my hand and caused the seal of the Hant Harrety Hrotection Office to be affixed at the City of Washington, D.C. this twelfth day of September, in the year two thousand one.

Allest. Parkoul

Commissioner Plant Variety Protection Office Agricultural Marketing Service In Messenon_ Secretary of Agriculture

Control of the contro	44	
U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVIC SCIENCE DIVISION	E 145 T 155	Application is required in order to determine if a plant variety protection
APPLICATION FOR PLANT VARIETY PRO	FECTION CERTIFICATE	certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).
NAME OF APPLICANT(S) (as it is to appear on the Certificate)	2. TEMPORARY DESIGNATION	3. VARIETY NAME
Michigan Agricultural Experiment Station	OR EXPERIMENTAL NO. D0256	Bavaria
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP)	5. PHONE (include area code)	FOR OFFICIAL LIGE ONLY
109 Agriculture Hall		PVPO NUMBER 900107
Michigan State University	(517) 355-0123	73001107
East Lansing, MI 48824-1039	(317) 333 0123	F Date 12/1/1998
6. GENUS AND SPECIES NAME 7 FAMILY NAME		Time
6. GENUS AND SPECIES NAME 7. FAMILY NAME	ME (Botanical)	N □ A.M. □ P.M.
Triticum aestivum L.		F Filing and Examination Fee:
8. CROP KIND NAME (Common Name)	9. DATE OF DETERMINATION	1 1 2450 00
Soft Winter Wheat	1000	S Date
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZA	1989	- 1 E 8-4-98
association, etc.)	ATION (Corporation, partnership,	C Certificate Fee:
Agricultural Experiment Station		113200
11. IF INCORPORATED, GIVE STATE OF INCORPORATION	12. DATE OF INCORPORATION	Date /
		1 8/24/61
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SEF	RVE IN THIS APPLICATION AND RECEIVE AL	L PAPERS
Dr. Ian Gray, Director, Michigan Agricultu 109 Agriculture Hall, Michigan State Unive Michigan 48824-1039	ersity, East Lansing	
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow I	PHONE (include area code):	
a. X Exhibit A, Origin and Breeding History of the Variety b. X Exhibit B, Novelty Statement c. X Exhibit C Objective Description of Variety d. Exhibit D, Additional Description of Variety e. X Exhibit E, Statement of the Basis of Applicant's Ownership f. X Seed Sample (2,500 viable untrealed seeds). Date Seed Sample in Filing and Examination Fee (\$2,325) made payable to "Treasurer of	ailed to Plant Variety Protection Office	
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD	BY VARIETY NAME ONLY AS A CLASS OF C	CERTIFIED SEED? (See section 83(a) of the
12. POEC TUS ADDITION TO AND 17		
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	IF "YES" TO ITEM 16, WHICH CLASSES OF	PRODUCTION BEYOND BREEDER SEED?
X YES NO		FERED CERTIFIED
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIE ☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ NO	TY IN THE U.S.? Patent Act. Give date:).
19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARK YES (If "YES," GIVE NAMES OF COUNTRIES AND DATES)	KETED IN THE U.S. OR OTHER COUNTRIES	2
YES (If "YES," GIVE NAMES OF COUNTRIES AND DATES) U.S.		Huron")
 The applicant(s) declare(s) that a viable sample of basic seeds of this variety we such regulations as may be applicable. 	Fact 1998 ill be turnished with the application and will be	e replenished upon request in accordance with
The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced no in section 41, and is entitled to protection under the provisions of section 42 of	ovel plant variety, and believe(s) that the varie the Plant Variety Protection Act.	ety is distinct, uniform, and stable as required
Applicant(s) is (are) informed that false representation herein can jeopardize pro-	otection and result in penalties.	
IGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE
Juden & Katral	Director	21 July 199
GNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE
	· ·	

Exhibit A. Origin and Breeding History (Bavaria)

Origin

Bavaria, a soft white winter wheat, was developed at Michigan State University and was tested as D0256. Bavaria is an F4-derived pure line that originates from the cross number 861823. The parentage of that cross is C0250/B7101// Pioneer Experimental W9021R. C0250 and B7101 are both breeding lines developed at MSU. The parentage of C0250 is Exotic 4870//2*Asosan/3*Genesee. The parentage of B7101 is Pd5517-A1//Suwon92/Brevor/5*Genesee. The parentage of Pioneer Experimental W9021R is (Tezanos Pintos Precoz / 2*Sonora 64 /7/(Pd4946A4-18-2-10-1, Norin 33-3 /6/ Fairfield /4/ Fultz / Hungarian*2 /2/PI94587 durum /3/ Fultz / Hungarian /5/Trumbull*3/2/ Hope / Hussar /3/ Newsar)/8/ (MO7718, Clarkan / Vigo /2/ Norin 66/3/ Redcoat), Pioneer Line W549)/9/Pioneer Line W558.

The F1 through F4 generations were grown as population bulks without single plant selection in the greenhouse or in the field near East Lansing Michigan. F4:5 head rows were planted in the fall of 1988 from heads randomly selected from F4 plants. Selection in the F4:5 head rows was based on resistance to powdery mildes, reduced plant height, and resistance to lodging. F4:6 drill plots were generated by planting families derived from bulk harvesting of selected F4:5 head rows. Selection among F4:6 drill plots was similar to that practiced in the F4:5 head row generation. One of the F4:6 drill plots was given the stock ID of D0256. D0256 was evaluated in yield trials in 1990 through 1994 as an F4-dervied line. A seed purification and increase system independent of yield trials was employed from 1991 until the fall of 1995 when F4:11 seed was transferred to Michigan Foundation Seed for the production of pre-breeders seed. Bavaria exhibited stable, uniform appearance both among and within seasons throughout the period of pre-release yield test and seed increase (1991 through 1995).

Exhibit B. Novelty Statement (Bavaria)

Bavaria is an awnless white seeded winter wheat with bronze glumes at maturity. The two varieties most like Bavaria in phenotype are Harus and Frankenmuth. Tables 1 and 2 summarize the traits that allow differentiation of these varieties from Bavaria.

Table 1. Comparison of Bavaria and Harus, data from

the 1995-1998 MSU wheat variety trials.

	T		T	
Trait	Year	Bavaria	Harus	LSD (0.05)
Flowering: day of year; Ingham County, 3 replications, 2000 plants per plot.	1995	161.9	160.1*	1.2
Flowering: day of year; Ingham County, 3 replications, 2000 plants per plot.	1997	167.5	164.0*	2.1
Wheat Spindle Streak Mosaic Virus Score (0-9); Ingham County, 3 replications, 2000 plants per plot.	1998	3.0	6.2*	2.0
Wheat Spindle Streak Mosaic Virus Score (0-9); Ingham County, 3 replications, 2000 plants per plot.	1997	2.7	8.7*	1.4

Table 2. Comparison of Bavaria, Harus, and Frankenmuth, data from the 1998 wheat variety trial.

, , , , , , , , , , , , , , , , , , , ,				icat variety	
Trait	Year	Bavaria	Harus	Frankenmuth	LSD(0.05)
Flowering: day of year: Ingham County, 3 replications, 2000 plants per plot.	1998	150,5	148.1*	149.6 ^{ns}	1.9
Plant Height (inches to tip of head): Ingham County, 3 replications, 2000 plants per plot.	1998	44.3	43.0 ^{ns}	46.3*	1.7
Plant Height (inches to tip of head): Midland County, 3 replications, 2000 plants per plot.	1998	41.6	41.3 ^{ns}	47.9*	1.2
Wheat Spindle Streak Mosaic Virus Score (0- 9): Ingham County, 3 replications, 2000 plants per plot.	1998	3.0	6.2*	9.0*	2.0

Variants in the original lot of Bavaria breeder seed include up to: 0.1% taller; 0.8% white chaff; 0.1% awned, and 3.0% red seed.

Response to PVPO' request for clarification on the nature of the scoring system used for wheat spindle streak mosaic virus (WSSMV):

The scale used for WSSMV in the PVP application for Bavaria is based on a visual evaluation of the intensity of symptoms evident at the point of maximum expression of this disease. That normally occurs sometime between the resumption of growth in the spring and Feekes stage 6 (stem elongation). A score of '0' is given for plots with no symptoms. A score of '9' is given for plots with what is judged to be maximum severity of symptoms. The scores 1-8 represent a uniform gradation between those two extremes. These scores are analyzed statistically without transformation of any kind.

EXHIBIT C

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE COMMODITIES SCIENTIFIC SUPPORT DIVISION BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY WHEAT (TRITICUM SPP.)

	KIIICOM SIFIJ
NAME OF APPLICANTIS	FOR OFFICIAL USE ONLY
Michigan Ag Experiment Station	PYPO NUMBER 9900107
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)	
109 Agriculture Hall	VARIETY NAME OR TEMPORARY DESIGNATION
Michigan State University	
East Lansing, MI 48824	BAVARIA
Place the appropriate number that describes the varietal characteristic place a zero in first box (e-s. 0 8 9 or 0 9) when number	ter of this variety in the boxes below. It is either 99 or less or 9 or less.
1. KIND:	
1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT	5 = POLISH 6 = POULARD 7 = CLUB
2. TYPE,	
2 1 = SPRING 2 = WINTER 3 = OTHER (Specify)	1 = SOFT 3 = OTHER (Specity) 2 = HARO
1 1 = WHITE 2 = RED 3 = OTHER (Specify)	
3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:	
1 6 5 FIRST FLOWERING	LAST FLOWERING
4. MATURITY (50% Flowering):	
2 NO. OF DAYS EARLIER THAN .Examkenmuth	. 1 - ARTHUR 2 - SCOUT 3 - CHRIS
1 no. of days <i>later</i> than Harus	-4 - LEMHI - 5 - NUGAINES - 6 - LEEDS
5. PLANT HEIGHT (From soil level to top of head);	•
1 0.0 cm. High (2 year Aug 95/96 data)	
5 CM. TALLER THAN Harris	
Frankenmuth	-1 - ARTHUR 2 - SGOUT 3 - CHRIS
5 CM. SHORTER THAN . SCHOOL STREET,	. STATES
PLANT COLOR AT BOOTING (See reverse):	7. ANTHER COLOR:
2 Tayellow green 2 = green 3 = Blue green	1 1=YELLOW 2 = PURPLE
Anthocyanin: 1 = ABSENT 2 = PRESENT	2 Vary bloom: 1 = ABSENT 2 = PRESENT
Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT	Intermodes: 1 = HOLLOW 2 = SOLID
	
4 NO. OF NODES (Originating from node above ground)	CM. INTERNODE LENGTH BETWEEN FLAG LEAF
AURICLES:	
Anthocyania: 1 = ABSENT 2 = PRESENT	2 Hairiness: I = ABSENT 2 = PRESENT
. LEAF:	
Flag leaf at = ERECT 2 = RECURVED booting stage: 3 = OTHER (Specify):	2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED
Hairs of first leaf sheath: = ABSENT 2 = PRESENT	2 Vary bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
1 4 MM. LEAF WIDTH (First leaf below flag leaf)	2 8 CM. LEAF LENGTH (First leaf below flag leaf):
ORM LMGS 470-6 (6-82) (Formerly Form LPGS 470-6 (3-79) which -	

1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		•	9900107
11. HEAD:		Shape: = TAP	
Density: 1 = LAX	2 = DENSE		ERING 2 = STRAP 3 = CLAVATE ER (Specily)
1 Awnedness: 1 = A	WHLESS 2 = APICALLY AWHLETED	3 = AWNLETED 4 = AW	NED
2 Color at maturity:	l=white 2=yellow 3=pink 4 5=brown 6=black 7=oth	= REO ER (Specily):	
CM. LENGTH		MM. WIDTH	
3 GLUMES AT MATUR 3 Length: 1 = SHORT 3 = LONG		3 Width: 1 = NARR	OW(CA. J mm.) 2 = MEDIUM(CA. J.5 mm.)
1 4 1	TING 2 = OBLIQUE 3 = ROUNDED RE 5 = ELEVATED 6 = APICULATE	2 Везк: 1 = овти	SE 2 = ACUTE . 3 = ACUMINATE
13. COLEOPTILE COLO	R:	14. SEEDLING ANTHO	CYANIN:
1 1 = WHITE 2 = F	RED 3 = PURPLE	1 I = ABSENT	2 = PRESENT
15. JUVENILE PLANT GI	ROWTH HABIT:		
3 1 = PROSTRATE	2 = SEMI-ERECT 3 = ERE	ст	
16. SEED:			
3 Shape: 1 = OVATE	2 = OVAL 3 = ELLIPTICAL	Cheek: 1 = ROUN	DED 2 = ANGULAR
2 Brush. 1 = SHORT	2 = MEDIUM 3 = LONG	Brush: I = NOT	COLLARED 2 = COLLARED
Phenol reaction	l = IVORY 2 = FAWN 3 = LT. BROW	N.	
(See instructions):	4 = BROWN 5 = BLACK	•	-
Color: 1 = WHITE	2 = AMBER 3 = REO 4 = PURPLE	5 = OTHER (Specify)	
MM. LENGTH	MM. WIDTH	3 8 GM. PER 100	0 SEEDS
17. SEED CREASE:			
Width: = 60% OR 1	LESS OF KERNEL 'WINOKA'	1 1	OR LESS OF KERNEL 'SCOUT'
	ESS OF KERNEL 'CHRIS'		OR LESS OF KERNEL "CHRIS"
	AS WIDE AS KERNEL 'LEMHI' ted, 1 = Susceptible, 2 = Resistant)	J - 30 * 0	A CLIP OF ACAITCE COMM
O STEM RUST	LEAF RUST	0 STRIPE RUST	0 LOOSE SMUT
2 POWDERY MILDEW	0 BUNT	2 OTHER (Specify)	
19. INSECT: (0 = Not Test	ed, 1 = Susceptible, 2 = Resistant)		
0 SAWFLY	O APHIO (Bydv.)	GREEN BUG	CEREAL LEAF BEETLE
OTHER (Specity)	HESSIAN FLY	GP A	в С
	RACES:	D	
20. INDICATE WHICH YARI	ETY MOST CLOSELY RESEMBLES THAT S	UBMITTED:	
CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Frankenmuth	Seed size	Frankenmuth
Leaf size	Frankenmuth	Seed shape	Frankenmuth
Leaf color	Frankenmuth	Coleoptile elongation	Frankenmuth
Leaf carriage	Frankenmuth	Seedling pigmentation	Frankenmuth

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

Exhibit D. Objective description of variety (Bavaria)

Morphological Description

Bavaria is a large seeded, soft white winter wheat variety with brown chaff. Bavaria has short awnlets of 3-40mm with the length and length and frequency of awnlets decreasing from the tip to the base of the spike. The spikes are fusiform in shape. The glumes are moderately pubescent, as is the rachis. Glume shoulders are generally square in shape and midwide in width. Kernels are long and ovate. The kernel crease is middeep, midwide, and rounded. The kernel brush is large in size and midlong in length.

Bavaria has excellent milling and baking properties. Based on three samples milled on an Allis Chalmers mill and baking analyses at the USDA Eastern Soft Wheat Quality Laboratory, Bavaria had the following characteristics:

- Test Weight 60.8 lb/bushel
- Friability = 29.4 %
- 1,000 Kernel Wt. = 39.2 g
- Flour Ash =0.37
- Allis Chalmers Milling Score =74.6
- Alkaline Water Retention Capacity. = 51.5 %
- Straight Grade Flour yield = 77.6 %
- Break Flour Yield= 32.1 %
- Endosperm Separation Index = 8.8%
- Cookie Diameter = 17.6 cm

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE	The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.		
EXHIBIT E	Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).		
STATEMENT OF THE BASIS OF OWNERSHIP			
1. NAME OF APPLICANT(S)	TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME	
Michigan Agricultural Experiment Station	D0256	Bavaria	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country)	5. TELEPHONE (include area code)	6. FAX (include area code)	
109 Agriculture Hall	(517)353-0123	(517) 353-5406	
Michigan State University	7. PVPO NUMBER		
East Lansing, MI 48824-1039			
8. Does the applicant own all rights to the variety? Mark an "X" in approp	9900107	YES NO	
8. Does the applicant own all rights to the vallety: Mark an X in applica	male block. If no, please expression	X AE2 NO	
	•		
9. Is the applicant (individual or company) a U.S. national or U.S. based of	company?	X YES NO	
If no, give name of country		[<u>A</u>]	
10. Is the applicant the original owner? X YES	NO If no, please answer one of the	following:	
· · · · · · · · · · · · · · · · · · ·	20 (a) and a contract of the c		
a. If original rights to variety were owned by individual(s), is (are) the o			
.,	NO If no, give name of country		
b. If original rights to variety were owned by a company(ies), is(are) the	e original owner(s) a U.S. based compar	ny?	
N/A YES	NO If no, give name of country		
11. Additional explanation on ownership (if needed, use reverse for extra s	space):		
	et i ver		
PLEASE NOTE:			
Plant variety protection can be afforded only to owners (not licensees) who meet of	one of the following criteria:	·	
1. If the rights to the variety are owned by the original breeder, that person must be which affords similar protection to nationals of the U.S. for the same genus are	be a U.S. national, national of a UPOV mem d species.	ber country, or national of a country	
2. If the rights to the variety are owned by the company which employed the orig member country, or owned by nationals of a country which affords similar pro-	inal breeder(s), the company must be U.S. b tection to nationals of the U.S. for the same	ased, owned by nationals of a UPOV genus and species.	
3. If the applicant is an owner who is not the original owner, both the original ow	mer and the applicant must meet one of the	above criteria.	
The original breeder/owner may be the individual or company who directed final	breeding. See Section 41(a)(2) of the Plant	Variety Protection Act for definition.	
According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collisis information collection is 0581-0055. The time required to compete this information collesearching existing data sources, gathering and maintaining the data needed, and completing and	ction is estimated to assertable in unitries but restor	control number. The valid OMB control number for nise, including the time for reviewing instructions.	
The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis: (Not all prohibited bases apply to all programs). Persons with disabilities who require alternativ USDA's TARGET Center at 202-720-2600 (voice and TDD).	at man poter entirest arisin ver referen ane disal	oility, political beliefs, and marital or familial status. (braille, large print, audiolape, etc.) should contact	
To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Wass			

Exhibit E. Basis of Ownership (Bavaria)

9900107

Creation of the originating cross, early generation selection, testing, purification and multiplication were all performed by employees of the Michigan State University wheat breeding program which is a component of the Michigan Agricultural Experiment Station. Exclusive rights to produce, promote, and market this variety have been granted to the Greater Michigan Seed company.

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